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# Detection of Cuttlefish Freshness by Semiconductor Trimethylamine Gas Sensors

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Detection of cuttlefish freshness has been demonstrated by employing pure and 5 mol% MgO-doped $In_2O_3$ sensors. The sensor response to gases evolved from cuttlefish muscle increased with a decrease in freshness, and this behavior was in good agreement with the change in the amount of trimethylamine (TMA) in the cuttlefish muscle. The TMA gas sensing was superior to the most commonly used freshness index, $K$ value, from the viewpoints of response time and sensitivity, especially with cuttlefish muscle stored for a certain period. In addition, the present method offered the potential advantage that the freshness of a wide variety of cuttlefish species could be monitored with sufficiently high sensitivity and quick response times.

## 1. Introduction

To date, application of semiconductor gas sensors has been expanded into various fields. For example, odor sensing is becoming ever more important in control systems for industrial processes and human comfort.

Trimethylamine (TMA) is a typical undesirable odor component to be eliminated from our working and/or living environments. A more important fact is that the concentration of TMA evolved from fish is closely related to its freshness.[1,2] This implies that fish freshness could be monitored by TMA gas sensors, if